Amendments to the Specification:

Please replace paragraph 0002 with the following amended paragraph:

0002 The present disclosure is related to commonly-assigned co-pending U.S. Patent Application No. 10/820,440, filed April 5, 2004, entitled "Modified Preamble Structure for IEEE 802.11a Extensions to Allow for Coexistence and Interoperability Between 802.11a Devices and Higher Data Rate, MIMO or Otherwise Extended Devices," which disclosure is incorporated herein by reference for all purposes.

Please replace paragraph 0004 with the following amended paragraph:

0004 In a typical wireless communication system in use today, a transmitter and a receiver communicate in accordance with a protocol such as the IEEE 802.11a standard. The standard specifies a keying scheme that generally involves grouping. Bits [[bits]] of data to be transmitted are grouped and each group of bits is mapped to a symbol (a particular combination of phase and amplitude) in a signaling constellation. A number of constellations (or keying schemes) are known in the art, including binary phase-shift keying (BPSK), quadrature phase-shift keying (QPSK), and quadrature amplitude modulation (QAM) constellations. The transmitter includes an encoder that transforms an input data stream into a sequence of symbols. The transmitter may also insert additional information-carrying symbols into the input data stream. For example, protocols such as IEEE 802.11a specify a "preamble" to precede transmitted data. The preamble usually includes parameter values related to various features of the signal (e.g., data rate, keying scheme, etc.) as well as a known sequence of bits or symbols (referred to herein as a "training sequence") that the receiver can use for calibration. The symbols are modulated using an appropriate protocol (e.g., OFDM (orthogonal frequency division multiplexing) in the case of IEEE 802.11a) into a form suitable for transmission over a channel. The receiver receives the signal, demodulates it, and generates an output data stream that ideally is identical to the input data stream.

Please replace paragraph 0032 with the following amended paragraph:

0032 Communication system 3 00 is advantageously implemented as an OFDM (orthogonal frequency division multiplexing) system, in which signals are split into several narrowband channels at different subcarrier frequencies selected to minimize interference between the channels. In some embodiments, communication system 300 is operable in various modes, one of which is compliant with the IEEE 802.11a standard entitled "Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) specifications, High-speed Physical Layer in the 5 GHz Band" incorporated herein by reference. In other modes, system 300 may be compliant with various extensions of the IEEE 802.11a standard, such as extensions described in above-referenced Application No. 10/820,440.

Please replace paragraph 0034 with the following paragraph:

0034 After mapping, the symbols are provided to packet formation block 314, which groups the symbols into packets for transmission. Packet formation block 314 may also add additional symbols into the data stream, such as a conventional IEEE 802.11a preamble as illustrated in Fig. 1 or a modified IEEE 802.11a preamble, e.g., as described in above-referenced Application No. 10/820,440.

Please replace paragraph 0039 with the following paragraph:

0039 Channel estimation block 334 is configured to detect a sample stream $\mathbf{r}[i]$ corresponding to the long training sequence and to use the detected training samples to generate channel estimates. Recognition of the training sequence may be accomplished using a variety of techniques, including mode-sensing techniques described in above-referenced Application No. 10/820,440. The channel estimates are advantageously provided as a set of $M_r M_t$ matrices $\mathbf{H}[k]$ with complex valued components that represent the channel effect for a particular transmit-receive pair for a given subcarrier k. Channel estimation block 334 advantageously implements an improved algorithm for generating channel-estimate matrices $\mathbf{H}[k]$, such as any of the algorithms described below. In some embodiments, channel estimation block 334 may also include additional components adapted to estimate other error corrections from the training data,

e.g., clock and carrier frequency offsets, noise power, and the like. Such aspects of error correction are not critical to the present invention and a detailed description is omitted.

Please replace paragraph 0044 with the following paragraph:

0044 Another option, described in above-referenced Application No. 10/820,440, is to apply a cyclic delay shift on the long training symbol and Signal field IFFT outputs prior to applying the guard time extension. For example, assume $L[k]$ and $D[k]$ are the 64 subcarrier values for the long training symbol and Signal field symbol, respectively. For a conventional 802.11a single transmitter transmission, the time samples for the long training symbol are derived by taking the 64-point IFFT of $L[k]$ to obtain $l[i]$ and transmitting the samples of $l[i]$. Thus, with the guard time, the long training symbol and guard time are constructed as $\{l[33:64]\ l[1:64]\ l[1:64]\}$, i.e., the IFFT output is repeated twice and the last 32 samples are prepended to form the long training guard interval. As with the conventional timing, the long training guard interval (32 samples) is twice as long as the guard interval for 802.11a data symbols (16 samples). The signal field is formed by $\{d[49:64]\ d[1:64]\}$, where $d[1:64]$ are the 64 samples of the IFFT of $D[k]$.

Please replace paragraph 0047 with the following paragraph:

0047 In an extended mode long training sequence, $L_1[k]$ may be modified. For example, a modified $L[k]$ can contain more than 52 non-zero subcarriers. Examples of suitable long training sequences with additional non-zero subcarriers are shown as sequences L_2 and L_3 in Fig. 4, following the same convention for subcarrier order as standard training sequence L_1 of Fig. 2. L_2 is advantageously used in communication systems configured for single input, multiple output (SIMO), while L_3 is advantageously used in MIMO communication systems. Other long training sequences may also be used, including various sequences having one or more of the following features: (1) the sequence is formulated such that channel estimation can be done for multiple transmitters; (2) the sequence has low cross-correlation with the standard 802.11a training sequence; and (3) the sequence is usable in a process for determining whether the packet is an 802.11a packet or an extended-mode packet. Further discussion of selection of training sequences may be found in above cross-referenced Application No. 10/820,440.

Please replace paragraph 0076 with the following paragraph:

0076 Any desired training sequence $L[k]$ may be used, including L_2 or L_3 shown in Fig. 4. For example, process 600 or 900 may be implemented in a legacy 802.11a communication system, e.g., with a single transmitter and a single receiver using the standard training sequence $L_1[k]$ of Fig. 2; in this instance, the window function of Eq. 24 is advantageously applied. As another example, in an extended rate system where all subcarriers are used, training sequence $L_2[k]$ of Fig. 4 might be used, and the window function of Eq. 24 might not be applied. In some embodiments, where all subcarriers except at DC are used to transmit data, a modified training sequence such as $L_2[k]$ or $L_3[k]$ (Fig. 4) that includes nonzero elements for all subcarriers may be used. It should also be noted that a modified training sequence such as $L_2[k]$ or L_3 $[k]$ may indicate to the receiver that the transmitter is using an extended rate transmission protocol, as described in above-referenced Application No. 10/820,440.